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ABSTRACT

The Outdoor Biology Instructional Strategies (OBIS) project began in 1972 to enable non-school youth groups (aged 10-15) to gain firsthand experiences in outdoor environments. This descriptive paper explains the program including its purpose and historical background. Specific objectives are to: (1) stimulate curiosity about local environments; (2) develop investigative and observational skills; (3) teach basic concepts of ecology; (4) help participants better understand their roles in ecosystems; and (5) provide exciting and educational outdoor experiences. The OBIS project uses a discovery approach in which active participants learn about such ecological topics as natural selection and food chains. Modules are divided into several one-hour activities with activity cards presenting: an overview, information summary, simple materials; outdoor conditions needed; step-by-step instructions; and optional activities. Specialized packets include the Trail Module and Camp Kit. Resource centers throughout the country have been established to promote the activities (with Florida's OBIS program highlighted). There is also an explanation of several phases in material development/evaluation. Reactions from teachers attending a summer institute indicate that they found the resource helpful in the classroom even though it was developed for non-school settings. (An appendix includes names and addresses of developers/suppliers and an extensive OBIS bibliography.) (DH)

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OBIS: Outdoor Biology Instructional Strategies

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Edward P. Donovan

National Curriculum Project Report
Secondary School Curriculum
SE-5050

Mr. Robert F. Richmond
Science Education Department
Florida Institute of Technology

August 6, 1981

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Historical Background

OBIS, which is an acronym for the "Outdoor Biology Instructional Strategies", was started in 1972 by members of the staff of the Lawrence Hall of Science, Berkeley, California. The principal initiators of the projects were Dr. Watson M. Laetsch (Director), Dr. Herbert Thier (Co-director), and Dr. Chester Lawson, all members of the professional staff at the Lawrence Hall of Science during that time. OBIS was supported during its developmental years by a grant from the National Science Foundation (Lockard, 1977).

The major reason the project was started was to enable youth groups to get firsthand experiences in working in the outdoor biological environment. It was hoped through this project that youngsters would be able to make more intelligent environmental decisions as adults. The project started by identifying the youth groups that needed activities of this type. The two activity manuals developed were the Pond Unit and Lawn Unit. These were not found to be adequate to meet the needs of the target groups. Each unit had a sequence of 10-15 activities organized to build ecological concepts but were not flexible and overly academic (McCormack, 1974).

In early 1974, the folio format was developed in which each activity was a separate unit. Each activity included background for the leader on the activity's major concept, the activity

challenge for the children, listing of materials necessary, preparation necessary, outline of the action, suggested questions, follow-up activities and other related OBIS activities.

Twenty-four activities were developed, with some dealing with aquatic environments and others dealing with terrestrial environments. These made up the Trial Edition I. This was found to be an effective format (McCormack, 1974; Fairwell, 1980; Kellogg, 1980).

Since that time, 97 activites were developed in trial edition sets I to IV. At present, the activities are being published commercially by Delta Education, which has divided up the activities into modules. The present modular form includes 6-10 activities each, which were grouped together because they were related. Each module was given a general heading such as "Adaptation" or "Animal Behavior", etc.

Target Population

The OBIS activites were developed to be used by English speaking children, 10-15 years old, of all ability levels. They also can be used successfully by both younger and older people. The activities are not school classroom curriculum. OBIS is a community oriented curriculum directed toward YMCA camps, museum groups, after-school ecology clubs, scouts, church youth groups, nature centers, and other organizations dealing with 10-15 year olds. The project was developed for use by a wide variety of people; therefore the materials were set up with the assumption that the leaders have no training in natural history or biology. An OBIS leader is usually a teacher, Girl Scout leader, den leader, Scout master, camp counselor, volunteer, parent, student or almost

anyone who works with children (Kellogg, 1980; Booth, 1979).

Purpose

The major purpose of OBIS according to Lockard (1977) is:

> If we are to make intelligent decisions regarding the future of our ecosystem, we must have a thorough understanding of basic biological relationships. The ecological understanding that grows with each OBIS experience will provide a base that youngsters can use in the future to consider environmental and ecological decisons more intelligently. (p. 372)

Objectives

McCormack (1977) lists the specific objectives of OBIS as:

1. To stimulate the curiosity of children about their local environment.

2. To develop the investigative and observational skills of each child.

3. To teach basic concepts of ecology through the interaction with the biotic and the abiotic factors in the environment.

4. To have the children better understand man's role in ecosystems.

5. To provide exciting and educational outdoor experiences for group leaders and children.

Theme

The theme of OBIS is the ecosystem, and deals with topics such as natural selection, succession, seasonal changes in life forms, food chains, species dominance and density, behavior, interaction of organisms with their environment and population structure. The OBIS activities promote an ecological theme which is very

flexible and adaptable to children of all ages, capabilities, interests, and background (Fairwell, 1980).

Approach and Methods

The OBIS project follows a discovery approach in which the students are active participants. The strategies used include games, simulations, craft activities, discussion, role playing, experiments and different types of data analysis (Fairwell, 1980).

The activities focus on local environments near the children's homes such as lawns, ponds, streams, vacant lots, etc. The activity modules are very flexible involving many entrance and exit points. The activities tie together the physical sciences, biological sciences, social sciences, art, recreation and psychology (McCormack, 1974).

The activities require very simple inexpensive and homemade equipment. Children may work individually, in groups of 2-12, or even larger groups (Lockard, 1974). The activities can be done almost anytime of the year. Generally, the individual activities take no longer than one hour of time from start to finish. The activities can be combined and used in full day field trips or less (McCormack, 1974).

Activity Cards

Each activity card consists of a number of major parts. There is an Overview, which introduces the major concepts of the activity and the major objective. There is a Bio Key, which indicates the type of activity and the major concepts to be developed. Following is the Background, which briefly summarizes the information needed by the leader. The Materials section lists all material needed, including optional materials and also states

if the equipment is available through Delta Education. Preparation states the conditions needed for the activity, such as group size, time, site, etc. This is followed by step-by-step instructions in the Action, in which the leader explains to the students what they must do in the form of a challenge. Finally, after students have completed the activity, information is shared, and the major concepts are then introduced. Optional activities are included in the Branching Out part of the activity (example in the appendix).

Each of the new OBIS modules put together by Delta Education include a Leader's Survival Kit (Leader's guide) which explains: (1) what OBIS is, (2) why OBIS, (3) how to use the OBIS folios, and (4) various suggestions on basic equipment, aids, guides, site selection, safety and conservation rules. Some of the activities contain areas entitled What Do You Think?, which contains questions for discussion and help to expand on the significance of the activity. Other activities contain Action Cards, which must be duplicated. The action cards are used especially in the game-oriented activities (Fairwell, 1980). (A listing of the OBIS activities produced by Delta Education are included in the appendix)

Resources

Over the past five years, OBIS has developed a network of resource centers throughout the country. These resource centers were developed to answer requests for information, materials, and sponsor workshops. The director of each center is well informed about the OBIS philosophy, approach and use of the materials. Directors are not funded; therefore, the director service varies from one center to another. Each center provides general information and display copies of OBIS materials. The centers are

expected to offer at least three inservice or preservice workshops per year (Fairwell, 1980).

There are 95 OBIS resource centers throughout the country, including two in Canada. A recent survey of OBIS resource center activities over the past five years (1975-1979) reports that 33,000 adults participated in OBIS training workshops. Of the adults, 36% were with community groups, while 64% were with schools. It has been estimated that over 786,000 youngsters have participated in OBIS activities because of resource center activities. It was reported that 60% of the children were 7 to 10 years old and 40% were 11 to 13 years old (Kellogg, 1980).

The Florida OBIS Director is Dr. David LaHart, whose office is at the Florida Solar Center at Cape Canaveral, Florida. I interviewed him recently about the status of OBIS in Florida. This will be discussed later in the paper.

Other resources that are available through OBIS are:

1. A 15 minute film on OBIS that can be rented or purchased from Delta Education, Inc., Nashua, N.H. This film can be used in OBIS workshops.

2. A publication for those interested in leading an OBIS workshop, entitled "Primer: How to Lead an OBIS Workshop" (DeLucchi and Knott, 1979).

3. The OBIS Newsletter, which reports on the progress of OBIS. It is published twice a year and is free of charge.

4. The OBIS Resource Center Directory, listing all OBIS directors for each state and their addresses (Included in the appendix).

5. Various promotional publications put out by Delta Education on the OBIS program.

6. An OBIS Sampler, available from Delta Education, for only $5.90, which gives a sampling of various OBIS strategies (In appendix).

7. Two booklets, the Pond Guide (Buller, 1978a) and Lawn Guide (Buller, 1978a), are also available. They are guides to identifying organisms found in these ecosystems. The booklets contain pictures and brief descriptions of the most common organisms.

It should be mentioned here that the OBIS coordinator for Delta Education is Kathleen A. Crouch, whose office is located in Nashua, N.H. She sent me a large number of materials on OBIS. A copy of the letter I received from her is in the appendix (Crouch, Note 2).

Additional Activities

Besides the regular OBIS modules, there are a variety of more specialized OBIS modules which can be used with very specific groups.

One of these special OBIS modules is the OBIS Trail Module, which explores both the impact of a foot trail on a hillside area and the effect the steepness of the trail has on the people who use it. One of the activities is called "Cardiac Hill" and deals with the effect that hiking up a steep trail has on human pulse rate (Buller, 1977).

Another of these special OBIS modules is the ACA/OBIS Camp Kit, which was developed to provide activities that meet the particular needs of campers. The four modules that make up this kit include activities which deal with developing environmental

awareness, knowledge of natural history, understanding the meaning of ecology, and understanding environmental quality (Buller, 1977).

A recent program using OBIS for family campers was held with great success at the Ouachata National Forest in the South Central region of the U.S. A total of 917 people participated in the program and responses to questionaires by participants were extremely positive (Kellogg, 1980).

Recently, the project materials have been translated into Spanish for use by the California Mini-Corps, a program for children of migrant workers (Booth, 1979).

Development and Evaluation

The major methods used in development and evaluation of OBIS is discussed by Falk et al (1975). Falk and his associates at the Chesapeake Bay Center for Environmental Studies in Edgewater, M.D. were actively involved in OBIS evaluation during 1972 to 1974. Some interesting comments by Falk and his associates about the evaluation and development process for OBIS were made. They stated that all OBIS activities developed are tried and evaluated at least three times (Phases I, II, and III) before they are ready for commercial distribution. All of the initial activities originated from OBIS staff members who are science teachers of various levels. The staff member starts the process by organizing an ecology idea into an activity. This is the beginning of Phase I of the development process. In order for an activity to be developed, it must meet six qualifications:

1. It must increase the understanding of ecology.
2. It must be able to be used by 10-15 year olds.

3. It must be designed for a readily available outdoor site.

4. It must be able to be used by untrained leaders.

5. It must last about one hour.

6. It must require only simple, inexpensive materials, that can be easily purchased or made by the leader.

If the activity meets the above qualifications, the OBIS staff member who originated the idea tries the activity out with a small number of students while another OBIS staff member observes. Both staff members prepare a report evaluating the activity. They must indicate which aspects of the activity succeeded and which failed. The activity is then recommended to be dropped, revised and retested using the same procedure again, or moved to Phase II.

In Phase II of development, the staff member writes the activity and develops the materials necessary to be used by a local youth group. Staff members observe the groups using the activity, write reports, and discuss the activity with the leader to get suggestions. The major emphasis at this time is placed on evaluating and revising the leader instructions. During Phase II, most of the evaluation is based on observation. There is a small amount of pilot testing done and written feedback on specific forms for students and leaders are used. Successful activities will go to Phase III; others are retested at Phase II or dropped.

Phase III requires that the activities are distributed to leaders and their groups in the local area. Materials are still provided at this point but instructions for making equipment are also included. Also, at this point, a certain amount of nationwide testing is carried out. Since OBIS staff members cannot observe all groups, written reports of leaders and youngsters are

used. Also, a photographic technique using a wide-angle lens, taking photographs at predetermined times is used to determine the percentage of student involvement. The four major purposes of Phase III are:

1. to determine the educational value of the activity.

2. to find out the attitude of the leaders and youngsters toward the OBIS materials.

3. to determine equipment effectiveness.

4. to determine if the students were actively involved in studying the ecosystem.

The major evaluation philosophy of OBIS is that the evaluation instruments have the same design and format as the OBIS activities themselves. For example, the evaluation activity for quadrant censusing is to census the number of loops of yarn in a square of shag carpet. The activity can be evaluated in this way before students go outdoors. Each of the evaluation instruments are adapted using the same Phase I to Phase III system used in regular activity development.

It is important to note here that no testing as we think of school testing takes place. This is because the OBIS curriculum was originally developed for non-school groups. The OBIS evaluation and development system requires three major components which are ideas, trials, and evaluation by observations and comments.

It should also be noted that, because OBIS activities are non-school, they must compete for time with sports, crafts, recreation, and social events. This requires that all OBIS materials are evaluated for enjoyment, practical usability, and educational soundness.

At the present time, feedback on the activities can be either sent to the Lawrence Hall of Science or Delta Education. When I contacted Dave Buller, the OBIS coordinator at the Lawrence Hall of Science, he stated that they go through every evaluation received from leaders and participants. The evaluations are reviewed and filed for future reference. He also stated that at the present time, they have not developed a method of analyzing all the feedback with a computer, but they are working on this. It was also mentioned in the conversation on the telephone that there are a number of outdoor education groups presently evaluating the OBIS curriculum, and he hopes to get feedback from these groups as soon as they have completed their studies (Buller, Note 1). (Copies of the feedback forms are included in the appendix of this paper)

Murtha (1977) at the University of Maine, decided to try the OBIS activities in a life science curriculum on seventh graders in a Maine junior high school. She found that it was very easy to incorporate many of the OBIS activities into her life science class. Murtha and her students found the activities to be very easy to adapt for school use and found that students who usually were not interested in science actually became interested for the first time while using OBIS.

Evaluation by F.I.T. Summer Program Teachers

During the present summer, I volunteered to introduce OBIS to the science teachers involved in the Methods of Individualizing Science Instruction course offered by Dr. Phillip Horton, Assistant Professor of Science Education at Florida Institute of Technology. I decided to approach the introduction of the OBIS curriculum to

the 11 teachers in the course by having them do an actual OBIS activity with myself as the group leader. The activity I chose was the Stickler activity whose purpose is to introduce the concepts of "habitat" and "distribution". After completing the activity, which required about one hour, I then gave the group an evaluation form which I developed to get their general feelings about the particular activity and the OBIS curriculum in general. My personal evaluation of the activity as the leader was that it was everything that the developers of OBIS stated. It was simple to coordinate, the materials were easily prepared, the teachers were all actively involved, and, in fact, the activity was exciting and very interesting. The folio format was very easy to follow. I would recommend the OBIS curriculum for use in schools.

The teacher evaluations I received are summarized in the Activity Evaluation Form located in the appendix. I will briefly summarize the teachers' comments:

1. Generally, the teachers felt the format would attract student attention and curiosity.

2. Most of the teachers found the content to be stimulating.

3. At least half of the teachers found the activity to have a good balance between scientific content and process.

4. Most teachers stated that difficult terms were explained and it utilized an inquiry approach.

5. Most teachers stated that the activity provided for individual differences and provided problem-solving situations.

6. Almost all the teachers stated that the activity was clear, understandable and very adaptable.

7. Everyone felt that the activity provided a great opportunity for students to share their findings.

8. All but one teacher felt that the activity primarily presented concepts and relationships and not facts.

9. Most of the teachers felt that the activity pace was just right.

10. All but one teacher felt the activity was at the right content level for the intended audience.

11. Most of the teachers decided that the objectives were realistic and that the content and style were interesting.

12. All teachers stated that the activity utilized available resources effectively.

13. Generally, most of the teachers felt the most outstanding element of the activity was their active participation.

14. Only one of the teachers felt that the activity should be modified. This particular teacher was uncomfortable with the discovery approach and would have liked more information before the activity was started.

15. On a scale of 1 tc 10, with 10 as the highest, the teachers rated the activity on the average as an 8.5.

16. Eight of the ten teachers who submitted the evaluation said they would use the OBIS in the classroom if they taught biology or environmental science.

17. Nine of the ten teachers said they would recommend OBIS to teachers at their school. The one teacher who didn't vote yes was not sure at this time.

Generally, I felt the activity went quite well and that the teachers were impressed with OBIS. Included in the appendix is a

copy of the Stickler activity, the Leader's Survival Kit, the map used in the activity, a summary of the teacher evaluations and copies of the individual teacher evaluations (Donovan, Note 3).

OBIS in Florida

I also visited Dave LaHart's office at the Solar Energy Center. He is the Florida OBIS Resource Director and the Environmental Education Coordinator for our area. He stated that OBIS is losing its interest in Florida. It has been six years since he has offered an all-day OBIS workshop for any group. He attributes the absence of interest to: (1) the lack of requests received, (2) all the environmental education programs that most Florida school districts have developed themselves, (3) the introduction of a new environmental education program called Project Learning Tree, which is free at the present, whereas OBIS costs money, (4) the low number of inservice days available to teachers, and (5) the lack of funds to support workshops. At the present time, most of Mr. La Hart's time involves contracts with Florida school districts to hold environmental education workshops. At these workshops, he normally introduces all of the major environmental education programs, lets the teachers do one activity for each program and then lets the teachers decide which they like the best. So, at the present time, he gives no special emphasis to OBIS. He treats it as all the other environmental education programs. He did state that during 1972 to 1975, he was constantly giving OBIS workshops, but at the present time the interest is not really there. One statement that he did make which surprised me was that he has very little contact with science teachers in Brevard County. He seems to think that they have forgotten he is there, so most of his

time is spent outside of Brevard County in other school districts like Dade and Orange Counties (LaHart, Note 4).

Conclusions and Comments

It is easy to see why the OBIS program has been so successful since its beginnings in 1972. The curriculum plan developed and evaluated was well done for the non-school youth groups for which it was developed. The following comments about the OBIS program are made in reference to the curriculum textbook by Saylor et al (1981):

1. The general curriculum plan of OBIS is of both the Generic Curriculum and Site-Specific types. It is an instructional package and also a national curriculum project. It seems to have taken the best of each approach and incorporated it into its developmental plan.

2. The basic approach to the development of the specific activities follows the inductive approach which is a "top down" operation. It also incorporates the problem-solving approach.

3. Both data about the learners and society are strongly considered, since the development of activities requires feedback by students and leaders. The involvement of the community outside the school is outstanding since this program was developed for non-school groups.

4. The program stresses current issues dealing with the environment and energy.

5. The hierarchy of purposes, goals, subgoals, and objectives are well defined in the Leader's Survival Guide and each individual activity.

6. The activities are of the discovery type. The program has

considered the development stage of the intended audience, following the educational theories of Piaget. The majority of activities are at the concrete operational stage which is exactly where it should be for the audience for which it was developed. This program makes the children "producers of knowledge, not mere passive consumers" (Saylor et al, 1981, p. 143).

7. A strong point of OBIS is that it stresses both of the two desirable general goals which are development of human traits and the behaviors to be learned. It does a good job of blending the two goals.

8. The curriculum designs used in OBIS include the subject matter/discipline design, the human traits/ processes design and the social functions/activities design. Therefore, the activities are organized by disciplines, through planned processes, and through community activities. This again is a strong point for OBIS since it incorporates the best of each of these design types.

9. The OBIS program also incorporates a large number of teaching models, such as simulation, games, community activities, discussion, group investigation, inquiry training, and role playing. By using a wide variety of these teaching models in one activity, it seems to eliminate any of the negative aspects of the models and emphasizes the positive aspects.

10. Since the program was developed for non-school groups, I can understand the lack of emphasis on using testing for summative evaluation. It would seem that the OBIS staff has been able to put a great emphasis on formative evaluation using the participant feedback forms. It appears that a major weakness of the OBIS curriculum is in reference to summative evaluation. The only

method used is by having students do evaluation activities to see if they understand the activity. A better method of long term analysis of the influences the curriculum has on people involved should be developed. The evaluation system seems to be very effective for measurement of short-term goals, but whether the involvement in activities will enable the youngsters to be better able to make intelligent decisions on environmental issues in the future is questionable. The evaluation models that have been used in the OBIS curriculum consists of a combination of two types which are decision making and responsive.

In conclusion, I would like to say that I have learned much from investigating OBIS. I feel that this curriculum project has made me very aware of the complexities of curriculum development and evaluation.

For further information about OBIS, contact:

1) Kathleen A. Crouch
   OBIS Coordinator
   Delta Education
   Box M
   Nashua, NH 03061 Tel. # 603/889-8899

2) Dave Buller
   OBIS Coordinator
   Lawrence Hall of Science
   University of California
   Berkeley, CA 94720 Tel. # 415/642-3679

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1. Buller, D. Personal communication, July 13, 1981.

2. Crouch, K. A. Personal communication, April 9, 1981.

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Appendix

SUMMARY

Date 7-16-81

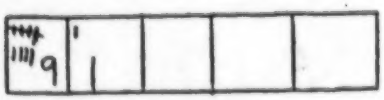
Activity Evaluation Form

Activity Title: STICKLERS Reviewed by: SUMMARY OF INDIV INSTR CLASS

Place an X in the box that most closely represents your feelings about the activity
Please make comments to explain details.

1.	The format attracts the attention and curiosity of the student.	7	1	1	1		The format does not attract the attention and curiosity of the student.
	Comment:						
2.	The content is stimulating.	3	5	1	1		The content is not stimulating.
	Comment:						
3.	Activity has a good balance between scientific content and process.	3	3	3	1		Activity does not have good balance between scientific content and process.
	Comment:						
4.	Difficult terms are adequately explained.	4	3	1	2		Difficult terms are not adequately explained.
	Comment:						
5.	Activity utilizes an inquiry approach.	7	1	1			Activity does not utilize an inquiry approach.
	Comment:						
6.	Activity provides for individual differences.	6	1	3			Activity does not provide for individual differences.
	Comments:						
7.	Activity provides problem-solving situations.	6	3	1			Activity does not provide problem-solving situations.
	Comments:						
8.	Activity is clear and understandable.	7	2	1			Activity is hard to understand.
	Comments:						
9.	Activity is adaptable.	8	2				Activity is not adaptable.
	Comments:						

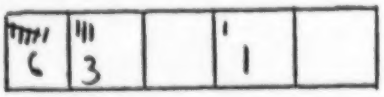
10. Activity provides opportunity for students to share their findings.



Activity does not provide opportunity for students to share their findings.

Comments:

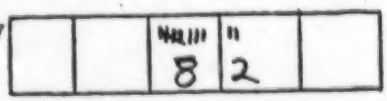
11. Activity primarily presents concepts and relationships.



Activity primarily presents facts.

Comments:

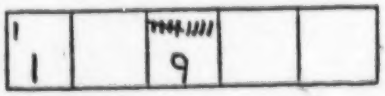
12. The pace of the activity is too fast.



The pace of the activity is too slow.

Comments:

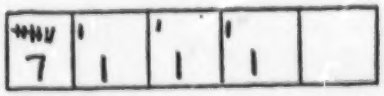
13. The content level of the activityis too difficult for the intended audience.



The content level of the activity is too easy for the intended audience.

Comments:

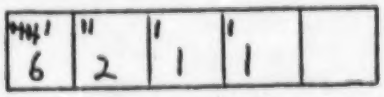
14. Activity objectives are realistic.



Activity objectives are unrealistic.

Comments:

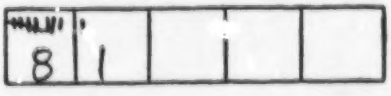
15. The content and style were interesting.



The content and style were dull.

Comments:

16. Activity utilized available resources effectively.



Activity did not utilize available resources effectively.

Comments:

17. Name an outstanding element of the activity.

18. Name an element which should be omitted or modified.

5
16
27
30
84 $\bar{x} = 8.4$

19. How would you rate OBIS in general after completing one of its activities?
Circle a number below:

1	2	3	4	5	6	7	8	9	10
(low)				1	1		2	3	3 (high)
				×	×		×	××	×××

20. Would you use OBIS in your classroom?(Circle one) NO ×1 NOT SURE ×1 YES ××××××

Outdoor Biology Instructional Strategies
Lawrence Hall of Science
University of California, Berkeley 94720
415-642-3679

December 5, 1980

Dr. Vincent A. Cyphers
Coordinator, Outdoor Education Program
University of Northern Colorado
Greeley, Colorado 80639

Dear Dr. Cyphers:

After a rather tortuous route one of your November letters to our editing staff finally reached me. Let me begin by apologizing for the lack of response on our part to your request for comments on your review of OBIS literature and research. Your first letter was lost in the shuffle when Dr. Knott was unexpectedly thrust into the position of acting director of the Lawrence Hall of Science and your second letter should have been addressed to myself. At any rate I regret the delays we may have caused you and hope my comments will be helpful.

There are two independent OBIS evaluation efforts that I have heard about, but I cannot comment on their completeness or conclusions since they haven't been published. The first study is being conducted by Dr. Tom Johnsten and Dr. Ted Mills at Oklahoma State University. They have been evaluating the use of OBIS with family campers in a national forest. An article on their work will be appearing in the December, 1980 OBIS Newsletter which should be out any day now. I have enclosed a copy of the article. The second study was brought to my attention by Judi Conrad, Information Specialist for Rural, Small School, and Outdoor Education forthe ERIC Clearinghouse on Rural Education and Small Schools in New Mexico. The study was conducted by a public school teacher in Las Cruces by the name of Luanne Sisson. Unfortunately I have not been able to get her address, much less a copy of her study. I would suggest contacting Judi at (505) 646-2623 if you want to track down the study.

As far as other in house evaluation is concerned we have been collecting summative feedback on OBIS activities over the past six years. OBIS feedback forms are enclosed with every set and we have received hundreds of the forms from OBIS users. In fact our current revision and rewriting of OBIS for commercial publication is being based on user's feedback. Unfortunately we haven't summarized the feedback that we have received in report form.

.../#2.

I have enclosed an OBIS Bibliography in the hope that it will contain something of interest. I would be interested in receiving a copy of your review on OBIS when it is completed.

Let me know if I can be of any further assistance.

Sincerely,

Dave Buller

Dave Buller
OBIS Coordinator

DB:aj

Enclosures: OBIS Bibliography,
Dec., 1980 OBIS Newsletter Article
"OBIS and the Family Camper."

OBIS NEWSLETTER ARTICLES

Fall, 1974: Contains articles on OBIS Field Centers, OBIS at camp, OBIS joins the Girl Scouts, OBIS goes beachcombing, how to make a "getter," available trial editions, and order forms.

Winter, 1974: Contains discussion of what OBIS is and how it explores a variety of approaches, article on the Lawn Unit, article on POND ecology, discussion of evaluation of OBIS units, and a discussion of the new unit, "Who Goes There?"

Fall, 1975: Contains listing of OBIS Trial Edition, Set II, changes in OBIS due to feedback order form, and an article about the new dimension OBIS has given to scouting written by a Girl Scout Program Director.

Winter, 1975: Contains discussion of OBIS in Florida and Seattle, listing of Trial Edition Set I, list of OBIS Field Centers and Directors and 12 new NSF grants given across the country for OBIS Implementation.

January, 1976: Contains discussion of the Junior League and OBIS, the new Trail Module, OBIS at Conventions, Girl Scout evaluation of OBIS, new module "Can Fishing," and listing of materials.

June, 1976: Contains discussion of how existing programs use OBIS, listing of OBIS materials, OBIS's role in Earth Week in Kansas, feedback from users, new resource centers, recent changes, and order form.

December, 1976: Contains discussion of OBIS and Migrant Education camps (Mini-Corps), development of activities in Idaho, and an article about using OBIS with high school students.

June, 1977: Contains a listing and description of Set III folios, description of OBIS and workshops given, a listing of a number of organizations who use OBIS, and an article by a teacher who uses OBIS for term projects.

January, 1978: Contains descriptions of development trips to Arizona and North Carolina, a report on the Mini-Corps Packet, and an article describing workshops by the University of Houston.

February, 1979: Contains information about the commercial publication of the OBIS materials, a description of the OBIS film, a status report of the OBIS project, and a description of Trial Edition Set IV.

October, 1979: Contains announcement of first commercial modules, reports on the use of OBIS in the inner-city of Baltimore, Maryland, and the use of OBIS/Mini-Corps in Lubbock, Texas.

and an announcement concerning the OBIS Resource Center Network.

February, 1980: Contains reports on the use of OBIS with the visually impaired, and with youngsters aged five to ten; a report of a paper presented to the AAAS convention concerning informal education; and an announcement of a new mailing list.

JOURNAL ARTICLES

Booth, Gerald, "Learning at Lawrence," American Education, March, 1979, pp. 41-47. Includes description of the activity development process used by the SAVI, HAP, and OBIS projects.

Buller, Dave, "OBIS and ACA - the Impossible Equation Does Match," Camping Magazine, April, 1977, pp. 10-11. Includes description of OBIS/ACA kits and how kit was developed.

Chen, Benjamin et al, "Problems in the Adaptation of Nonformal Study Programs to the Israeli Education System," Science Education, Vol. 63, No. 5, pp. 705-713. 1979.

DeLucchi, Linda, "Enrich Your Outdoor Program with OBIS," Nature Study 30 (2): 9-10. Article describes OBIS, how some groups use OBIS activities, examples of activities, and how to order sets.

Falk, J.H., "Outdoor Education: A technique for Assessing Student Behavior," School Science and Mathematics, Vol 76, No. 3, March, 1976, pp. 225-230.

Falk, J., L. Malone, and M. Linn, "Outdoor Biology Instructional Strategies: Development and Evaluation," American Biology Teacher, March, 1975, pp. 162-173. Article contains a description of the three plases of development of OBIS activities, OBIS evaluation philosophy, and a more thorough coverage of the development and evaluation of the "Lawn Unit."

Fisher, J.W., "An Encounter with OBIS," SASTA, July, 1976, pp. 47-48. Fisher, from Wattle Park Teachers Centre, participated in an OBIS workshop in February, 1975 and describes what he experienced and his opinions of OBIS.

Jiran, J., "What's an OBIS Doing at Camp Ozone," Tennessee Conservationist, Vol. XLII, May, 1976, No. 4. Description of OBIS workshop held for camp councellors by Nat. Camping Assoc., at Camp Ozone, Tennessee.

McCormack, Alan J., "OBIS: The Science Un-Curriculum," Learning, 3(2): 62, Nov., 1974. Article describes where OBIS activities are planned for, how they have universal applicability, and contains a listing of sample activities.

Murtha, Kathleen T., "OBIS + Kids = Activity," American Biology Teacher, Vol. 39 (7), October, 1977, pp. 439, 454. Describes OBIS approach and usefulness of incorporating OBIS in the classroom.

Richardson, N., "Just Add Water," Journal of Marine Education, Summer, 1976, pp. 20-24. Contains diecussion of adaptation of OBIS activities by Mariner Girl Scouts for tiedpool and beach exploration.

Sanford, Julie P., "Biology in the School Lot," The Science Teacher, Vol. 45 (2), February, 1978, pp. 24-25. Points out aspects of the OBIS program that make it exciting and adaptable to the school setting.

Thier, H.D. and A.J. McCormack, "Outdoor Biology Instructional Strategies," peper presented to Natural Science for Youth Foundation Conference. December, 1973. Contains description of what OBIS is and is not, and descriptions of units currently under development.

Thomas, Barry, "Environmental Ed for the Blind," Instructor, May, 1977, pp. 106-107. Contains descriptions of OBIS activities and how they were used with blind students in a camp setting.

SHORT ARTICLES OR CITATIONS

Abruscato, J. and J. Hassard, Loving and Beyond: Science Teaching for the Humanistic Classroom, Goodyear Publ. Co., 1976. Book containing a table on p. 14 which lists curriculum projects for the reader to explore, and includes OBIS.

Conservation and Environmental Studies Center, "Free Environmental Education Workshops," Brown Mills, N.J. Contains timetable of workshops and description of OBIS.

_____, "We Want You to Win with OBIS," Brown Mills, N.J. Short article stating if the reader has used OBIS materials and answers four questions, he/she may win a prize.

Environmental Education Report, "OBIS: Biology Outdoors and Out of School,: Oct., 1974, p. 9. Contains description of OBIS, its goals, audience, materials, history.

_____, "OBIS," Dec./Jan. 1976, Vol 4(1): 11. Very short description of OBIS activities.

_____, "Dissemination Come True," May, 1976, p. 9. Discusses how OBIS disseminated environmental education materials.

Gastonia Gazette, "Research Biologists Develop Outdoor Biology Activities, October 9, 1977. Gives brief background on OBIS and description of development trip to North Carolina forest by OBIS authors.

Gunn, B., "OBIS," Junior League Viewpoint, March, 1976, p. 17. Description of OBIS training session for Junior League members at LHS, followed by members bringing OBIS to three Oakland Public High Schools.

Hagle, Antonia, "OBIS Feedback," Junior League Viewpoint, February, 1977, pp. 16-17. Describes continuing program of Junior League volunteers in East Bay Schools.

Kennedy, Dorothy E., "O-B-I-S...An Adventure...," Girl Scout Leader, March/April, 1977, pp. 18-20. Describes how a leader could incorporate OBIS into the Girl Scout program.

Laetsch, W.M., "OBIS," Science and Curricular Developments, 9th Report, 1974. Short description in government publication of OBIS activities, purpose, and audience.

Learning, "Resource List," Jan., 1976, p. 25. Listed on the Resource List for students grades 6-9 is a citation of OBIS.

National Intercom, (Boy Scout Newsletter), "Workshop to be Held Here," Nov., 1975, p. 2. Discussion of OBIS workshop held Nov. 22, 1975.

Phoenix Gazette, "Berkeley Team Kid-Tests Ideas in the Desert," November 2, 1977. Newspaper article which describes development trip to Arizona desert by OBIS authors.

Rensel, Jan, "Hybrids, Creative Combinations of Curriculum Materials," Branch 4, (Project Learning Tree). Combines Project Learning Tree and OBIS by related lessions.

Salinas Californian, "4-H Club's OBIS Opens Young Eyes," April 14, 1976, p. 29. This newspaper article describes the week-long intensive training program for 4-H members using OBIS activities in Salinas, California.

Science Education News, "OBIS Set IV Trial Edition Completed," Summer/Fall, 1979. Briefly describes LINC program which involves inner city students with OBIS activities.

Scouting Around, "OBIS: Exploring Your World," May/June, 1976, p. 6. Bulletin article which describes OBIS in the San Fernando Girl Scout Council.

PROGRAMS WHICH INCLUDE OBIS ACTIVITIES

Callagan, Sara S., "Teacher's Activity Guide to Coastal Awareness," Marine Bulletin Number 23, University of Rhode Island, 1977. Used OBIS in a program studying the coast of Rhode Island.

Discovering the Forest, North Carolina Department of Natural Resources and Community Development. Uses shortened OBIS format and

several OBIS activities in a packet of forty activityes dealing with the forest environment.

Lasswell, Patrick and Barry Thomas, "Live in the Chaparral," Tucker Wildlife Sanctuary Nature Series, No. 8, 1975. Gives specific information about chaparral organisms that illustrate a general concept, then identifies related OBIS activities.

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July 13, 1981

Edward P. Donovan
Science Education Department
Florida Institute of Technology
Melbourne, Florida 32901

Dear Ed,

Thank you for your call and interest in the OBIS program. I have enclosed the letter that I mentioned concerning OBIS evaluation. I imagine you can get a copy of Dr. Cyphers evaluation overview by writing for one. The OBIS Bibliography and ORC Directory are also enclosed.

Let me know if I can be of any other help. If you are not already on the OBIS mailing list, send your name and address to Delta Education.

Sincerely,

Dave Buller

Dave Buller
OBIS Coordinator

DB:aj

Enclosures: Copy of letter to Dr. Cyphers
dated 12/5/80,
OBIS Bibliography, and
ORC Directory.

Outdoor Education Program

University of Northern Colorado
Greeley, Colorado 80639
(303) 351-2807

October 5, 1981

Mr. Edward P. Donovan
Resource Center Coordinator
Florida Institute of Technology
Melbourne, Florida 32901

Dear Mr. Donovan:

Your letter requesting information on OBIS arrived during the final examination period of the Summer Session after which I left immediately on vacation, thus the delay in responding to your request for information.

A doctoral candidate Ms. Wendy Winslow, address: N 61 29425, Hy. EF, Hartland, Wisc. 53029, has been in the process of conducting a research study with girl scouts evaluating the effectiveness of the OBIS approach in learning. She has not completed her research project to date so I do not know what results she has gained.

If you care to write her I am sure she will share what she has discovered.

If I find additional information in regard to OBIS, I will enclose the same.

Best regards.

Sincerely,

Vincent A. Cyphers

Vincent A. Cyphers, Professor
Coordinator, Outdoor Education Program
Department of Leadership and Management
College of Education